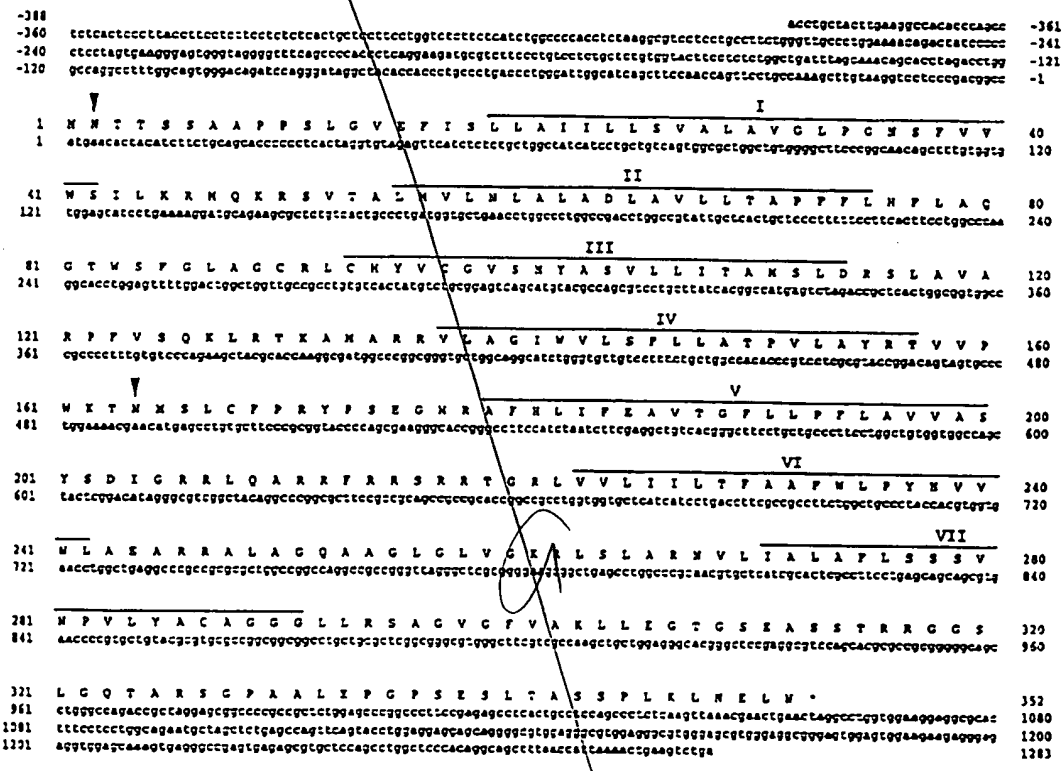
What is claimed is:

1. A purified DNA molecule having the sequence:

CLONING OF NOVEL HUMAN CHEMOATTRACTANT RECEPTOR



SEQ ID NO:1

2. A DNA molecule according to claim 1, which encodes a soluble human heptahelix receptor.

3. A DNA molecule according to claim 1 having the sequence: (I) in Fig. 1.

4. A DNA molecule according to claim 1 having the sequence: (II) in Fig. 1.

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5. A DNA molecule according to claim 1 having the sequence: (III) in Fig. 1.

6. A DNA molecule according to claim 1 having the sequence: (IV) in Fig. 1.

7. A DNA molecule according to claim 1 having the sequence: (V) in Fig. 1.

8. A DNA molecule according to claim 1 having the sequence: (VI) in Fig. 1.

9. A DNA molecule according to claim 1 having the sequence: (VII) in Fig. 1.

10. A DNA sequence according to claim 1 encoding the heptahelix receptor polypeptide expressed by a microorganism selected from the group consisting of yeast, bacteria, and eukaryotic cells.

11. A recombinant vector comprising an expression vector containing a DNA molecule as claimed in any one of claims 1 to 10.

12. A host cell transduced or transfected with a vector as claimed in claim 12.

13. A method of making heptahelix receptor, which comprises providing a host cell comprising an expression vector containing the DNA molecule of claim 1, and expressing said DNA to produce said receptor.

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14. A method according to claim 16, which comprises recovering the heptahelix receptor.

15. A method according to claim 16, wherein the host cell is a bacterium or yeast.

16. A heptahelix receptor having the sequence:

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1    MNTTSSAAPPSLGVEFISLLAIILLSVALAVGLPGNSFVV   40
41   WSILKRMQKRSVTALMVLNLALADLAVLLTAPFFLHFLAQ   80
81   GTWSFGLAGCRLCHYVCGVSMYASVLLITAMSLDRSLAVA  120
121  RPFVSQKLRTKAMARRVLAGIWVLSFLLATPVLAYRTVVP  160
161  WKTNMSLCFPRYPSEGHRAFHLIFEAVTGFLLPFLAVVAS  200
201  YSDIGRRLQARRFRRSRRTGRLVVLIILTFAAFWLPYHVV  240
241  NLAEARRALAGQAASGLGLVGKRLSLARNVLIALAFLSSSV  280
281  NPVLYACAGGGLLRSAGVGFVAKLLEGTGSEASSTRRGGS  320
321  LGQTARSGPAALEPGPSESLTASSPLKLNELN (SEQ ID NO:2)  352
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17. A fragment of heptahelix receptor comprising up to about 100 consecutive amino acid residues in Fig. 1 and containing Asn-2.

18. A fragment of heptahelix receptor comprising up to about 100 consecutive amino acid residues in Fig. 1 and containing Asn-164.

19. A fragment of heptahelix receptor comprising up to about 200 consecutive amino acid residues in Fig. 1 and containing Cys-90 and Cys-168.

20. A fragment of heptahelix receptor selected from the group consisting of DNA molecules having the sequences (I), (II), (III), (IV), (V), (VI), and (VII) in Fig. 1.

21. A method of detecting Burkitt's lymphoma, wherein the method comprises providing disrupted human cells, contacting the

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cells with DNA as claimed in claim 1, and detecting a hybrid containing said DNA.

22. An antibody that specifically recognizes the heptahelix receptor as claimed in claim 16.

23. The antibody as claimed in claim 22, which is a monoclonal antibody.

24. A method of detecting Burkitt's lymphoma, wherein the method comprises providing human cells, contacting the cells with the antibody as claimed in claim 22, and detecting immunological complex containing said antibody.

25. A method for lowering the level of active leukotriene B4 in a mammal in need thereof, which comprises administering to said mammal a leukotriene B4-lowering amount of a receptor comprising the sequence of amino acids of SEQ ID NO:2.

26. A method for lowering the level of active leukotriene B4 in a mammal having inflammation, which comprises administering to said mammal a leukotriene B4-lowering amount of a leukotriene B4 receptor comprising the sequence of amino acids of SEQ ID NO:2.

27. A method for lowering the level of active leukotriene B4 in a mammal having bronchoconstriction, which comprises administering to said mammal a leukotriene B4-lowering amount of a leukotriene B4 receptor comprising the sequence of amino acids of SEQ ID NO:2.

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28. A method for lowering the level of active leukotriene B4 in a mammal having arthritis, which comprises administering to said mammal a leukotriene B4-lowering amount of a leukotriene B4 receptor comprising the sequence of amino acids of SEQ ID NO:2.

29. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB_4 produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B_4 receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit activity of human leukotriene B4 on polymorphonuclear leukocytes or monocytes in said human to thereby inhibit said tissue injury.

30. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB_4 produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B_4 receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to modulate the inflammatory effect of leukotriene B4 on polymorphonuclear leukocytes or monocytes by counteracting cell movement induced by LTB_4 in said human.

31. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB_4 produced in response to an inflammatory stimulus

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in the human, wherein the method comprises administering to said human a leukotriene B_4 receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit the stimulatory effect of leukotriene B4 on adherence of polymorphonuclear leukocytes or monocytes in said human to thereby inhibit said tissue injury.

32. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB_4 produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B_4 receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit stimulatory effect of leukotriene B4 on oxidative burst of stimulated polymorphonuclear leukocytes in said human to thereby inhibit said tissue injury.

33. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB_4 produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B_4 receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit the stimulatory effect of leukotriene B4 on degranulation of stimulated polymorphonuclear leukocytes in said human to thereby inhibit said tissue injury.

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34. A method of treating a human to inhibit tissue injury accompanying inflammation resulting from leukocyte activity induced by LTB_4 produced in response to an inflammatory stimulus in the human, wherein the method comprises administering to said human a leukotriene B_4 receptor comprising the sequence of amino acids of SEQ ID NO:2 in an amount sufficient to inhibit the effect of leukotriene B4 on oxidative burst or degranulation of stimulated neutrophils in said human to thereby inhibit said tissue injury.

35. A method for assaying a ligand or an antagonist or agonist for said ligand, wherein the method comprises:

(A) providing a heptahelix receptor as claimed in claim 16 or a fragment thereof comprising a binding domain for the ligand, antagonist, or agonist;

(B) incubating the receptor with a test sample suspected to contain the ligand, antagonist, or agonist; and

(C) detecting binding between the receptor and the ligand, antagonist, or agonist.

36. A method according to claim 35, wherein the receptor is in an external cell membrane of a host cell transfected or transduced with DNA encoding the receptor.

37. A method according to claim 35, wherein binding is detected by intracellular calcium level in the host cell.

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